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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/777,928 | 02/11/2004 | Yoshinori Kancsaka | 60824 (71719) | 5505 |

21874 7590 09/28/2007
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| EXAMINER |
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HERNANDEZ, NELSON D

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| ART UNIT | PAPER NUMBER |
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2622

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| MAIL DATE | DELIVERY MODE |
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09/28/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/777,928

Applicant(s)

KANESAKA, YOSHINORI

Examiner

Nelson D. Hernandez

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 and 3 is/are allowed.
- 6) ☒ Claim(s) 2 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/10/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Examiner acknowledges the amended claims filed on August 6, 2007.

Claims 1 and 3 have been amended.

Response to Arguments

2. Applicant's arguments, see page 9, filed August 6, 2007, with respect to the rejection(s) of claim(s) 2 and 4 under 35 USC § 102 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a different embodiment in prior art used.
3. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., both the signal charge and unnecessary charge are commonly transferred from the shift register to the output section) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The Examiner notes that the invention outputs both the signal and the unnecessary charge using the same horizontal shift register and output. However, the claim as written does not require the both signals to be transferred using a single horizontal shift register and output.

Claim Objections

4. **Claim 1** is objected to because of the following informalities: in line 21, "the necessary charge" should be changed to "the signal charge", since it appears to be related to the signal charge. Appropriate correction is required.
5. **Claim 3** is objected to because of the following informalities: page 5, line 13, "the necessary charge" should be changed to "the signal charge", since it appears to be related to the signal charge. Also, in line 13, "...each shift gate," should be changed to "...each shift gate". Appropriate correction is required.
6. **Claim 4** is objected to because of the following informalities: the claim at the end has two periods (*each color..*). Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto, US Patent 5,526,048.**

Regarding claim 2, in a first embodiment Yamamoto discloses a drive method of a CCD color image sensor (CCDs 12, 13 and 14 as shown in fig. 1), comprising the steps of: transferring unnecessary charges occurring in a photoelectric conversion element group (Fig. 4: 51) of each color in a shift register (Vertical transfer CCD 54 as

shown in fig. 4) in a time period (accumulating period starting at time T1 as shown in fig. 6) of accumulating signal charges in the photoelectric conversion element group of each color (Note that the unnecessary charges are transferred to the V-CCD 54 at time T2, which is during the accumulation time; see time diagrams for each color in fig. 6); and transferring the signal charges accumulated in the photoelectric conversion element group of each color in response to a time period (T4 as shown in figs. 4 and 6) for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges in the photoelectric conversion element group of each color (Yamamoto discloses that at time T4, a vertical transfer of the effective electric charge is started, so that the effective electric charge is transferred from the vertical transfer CCD 54 to the accumulating unit 53. During this vertical transfer operation, residual electric charge starts to be accumulated in the photodiodes 51 and the vertical transfer CCD 54. After one field's worth of image signal has been transferred to the accumulating unit 53, the signal is read out at a predetermined time. Namely, the effective electric charge is outputted externally from the accumulating unit 53 through the horizontal transfer CCD 56; see col. 4, lines 26-36) (Col. 3, line 56 – col. 4, line 36; col. 5, line 9 – col. 6, line 17).

The first embodiment in Yamamoto does not explicitly disclose said transferring of said signal charges accumulated in said photoelectric conversion element group of each color being in response to a different time period for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges in the photoelectric conversion element group of each color.

However, in a second embodiment Yamamoto discloses the use of a color wheel (72 as shown in fig. 7) to control the colors being received by the image sensor, wherein as shown in fig. 10, Yamamoto teaches transferring of said signal charges accumulated in said photoelectric conversion element group of each color (Red, Green and Blue) being in response to a different time period (period P1 for red color; period P5 for Green color; and period P9 for Blue color; Note that the periods for accumulating unnecessary charge are different since they occur at different times based on the color to be used for exposure based on the color wheel operation) for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges (time period T4 as shown in fig. 10, wherein there is a time period between T4 and T1 for each of the time periods P1, P5 and P9) in the photoelectric conversion element group of each color (Col. 6, lines 18-41; col. 8, lines 18-49).

Therefore, taking the combined teaching of Yamamoto in the first embodiment in view of the teaching of Yamamoto in the second embodiment as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the drive method of a CCD as shown in the first embodiment to have the transferring of said signal charges accumulated in said photoelectric conversion element group of each color being in response to a different time period for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges in the photoelectric conversion element group of each color. The motivation to do so would have been to have an

alternative method that would reduce the amount of imaging elements needed to capture the image data thus would also reduce the cost of manufacturing of a camera.

Regarding claim 4, in a first embodiment, Yamamoto discloses a color image input apparatus (See fig. 1) comprising: a CCD color image sensor (CCDs 12, 13 and 14 as shown in fig. 1) including a photoelectric conversion element group (Fig. 4: 51) of each color and a shift register (Vertical transfer CCD 54 as shown in fig. 4) of each color; means for transferring unnecessary charges occurring in a photoelectric conversion element group of each color in a shift register in a time period (accumulating period starting at time T1 as shown in fig. 6) of accumulating signal charges in the photoelectric conversion element group of each color (Note that the unnecessary charges are transferred to the V-CCD 54 at time T2, which is during the accumulation time; see time diagrams for each color in fig. 6); and means for transferring the signal charges accumulated in the photoelectric conversion element group of each color in response to a time period (T4 as shown in figs. 4 and 6) for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges in the photoelectric conversion element group of each color (Yamamoto discloses that at time T4, a vertical transfer of the effective electric charge is started, so that the effective electric charge is transferred from the vertical transfer CCD 54 to the accumulating unit 53. During this vertical transfer operation, residual electric charge starts to be accumulated in the photodiodes 51 and the vertical transfer CCD 54. After one field's worth of image signal has been transferred to the accumulating unit 53, the signal is read out at a predetermined time. Namely, the effective electric charge is outputted externally from the accumulating unit

Art Unit: 2622

53 through the horizontal transfer CCD 56; see col. 4, lines 26-36) (Col. 3, line 56 – col. 4, line 36; col. 5, line 9 – col. 6, line 17).

The first embodiment in Yamamoto does not explicitly disclose that said means for transferring said signal charges accumulated in the photoelectric conversion element group of each color transfers said signal charges in response to a different time period for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges in the photoelectric conversion element group of each color.

However, in a second embodiment Yamamoto discloses the use of a color wheel (72 as shown in fig. 7) to control the colors being received by the image sensor, wherein as shown in fig. 10, Yamamoto teaches transferring of said signal charges accumulated in said photoelectric conversion element group of each color (Red, Green and Blue) being in response to a different time period (period P1 for red color; period P5 for Green color; and period P9 for Blue color; Note that the periods for accumulating unnecessary charge are different since they occur at different times based on the color to be used for exposure based on the color wheel operation) for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges (time period T4 as shown in fig. 10, wherein there is a time period between T4 and T1 for each of the time periods P1, P5 and P9) in the photoelectric conversion element group of each color (Col. 6, lines 18-41; col. 8, lines 18-49).

Therefore, taking the combined teaching of Yamamoto in the first embodiment in view of the teaching of Yamamoto in the second embodiment as a whole, it would have

Art Unit: 2622

been obvious to one of ordinary skill in the art at the time the invention was made to modify the color image signal apparatus as shown in the first embodiment to transfers said signal charges in response to a different time period for each color set in the photoelectric conversion element group of each color in the shift register in the time period of accumulating the unnecessary charges in the photoelectric conversion element group of each color. The motivation to do so would have been to have an alternative method that would reduce the amount of imaging elements needed to capture the image data thus would also reduce the cost of manufacturing of said color image signal apparatus.

Allowable Subject Matter

9. **Claims 1 and 3** are allowed.
10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 1, the main reason for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest, including all the elements of the present claim, transferring the signal charge from the shift register to the output section in a state that the shift gate is closed; transferring the unnecessary charge in the photoelectric conversion element group to the shift register and the unnecessary charge from the shift register to the output section in a state that the shift gate is opened; and transferring the signal charge from the shift register to the output section while accumulating the signal charge in the photoelectric conversion element group in a state that the shift gate is closed, wherein the signal charge is transferred from the shift

register to the output section in a time period that is set for each sensor section and is different for each sensor section.

Regarding claim 3, the main reason for indication of allowable subject matter is because the prior art fails to teach or reasonably suggest, including all the elements of the present claim, that the controller that transfers the signal charges accumulated in each photoelectric conversion element group to each shift register by opening each shift gate transfers the signal charge from the shift register to the output section in a state that the shift gate is closed; transfers the unnecessary charge in the photoelectric conversion element group to the shift register and the unnecessary charge from the shift register to the output section in a state that the shift gate is opened; and transfers the signal charge from the shift register to the output section while accumulating the signal charge in the photoelectric conversion element group in a state that the shift gate is closed, wherein the signal charge is transferred from the shift register to the output section in a time period that is set for each sensor section and is different for each sensor section.

Conclusion

11. Because new grounds of rejection have been established to reject unamended **claims 2 and 4**, this Office Action is made Non-Final.

Art Unit: 2622

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 9:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson D. Hernandez
Examiner
Art Unit 2622

NDHH
September 19, 2007


TUAN HO
PRIMARY EXAMINER